Amendments to the Claims:

Listing of Claims:

1. (Amended) An improved ventilating range hood, comprising:

a sheet metal collecting hood, vented to the outdoors;

a variable speed, electronically controllable fan, mounted in such a way as to draw air from a cooking area and out through said vent of said collecting hood;

a plurality of air quality sensors capable of detecting both comfort factors and the presence of hazardous substances in the air[[.]];

~~a controller that is programmed with an algorithm that responds to the presence of air quality factors by adjusting the speed of said variable speed fan according to a computed ventilation requirement~~

an embedded control algorithm which examines the composite output of said discrete air quality sensors, as well as, the trend information and determines from said information an instantaneous ventilation requirement, and

a control signal, derived from said algorithm to regulate the fan speed level such that every combination of discrete air quality sensor conditions will have a unique associated fan speed level based on said ventilation requirement.

2. (Original) The improved range hood of claim 1, wherein said air quality sensors include sensors for temperature, humidity, carbon monoxide and smoke.

3. (Amended) The improved range hood of claim 2, including an audible alarm that is activated ~~if the detected level of hazardous substances remains at a pre-established threshold~~ if despite the highest degree of airflow deployed in response to a hazard condition, the detected contaminant presence remains at a hazardous level for longer than a predetermined period of time.

4. (Amended) The improved range hood of claim 3, including a mounted display panel that indicates the status of each substance of the hazardous elements ~~substance~~.

5. (Amended) The improved range hood of claim 4, wherein said controller uses a fuzzy logic control algorithm that provides the appropriate fan motor speed based on a computed ventilation requirement such that the air quality sensor outputs are mapped into linguistic labels by means of membership functions that can in turn be used with experiential rules of the form: IF Smoke is MEDIUM and CO is LOW, THEN Fan speed should be MEDIUM;

and such that two different input conditions such as Temperature is HOT and Temperature is WARM can be true to different degrees depending on the actual temperature and the way that the membership functions that map the inputs to the labels are drawn;

and such that the resulting action prescribed by the controller would be a weighted average that reflects the degree to which each of the input conditions are true.

6. (Original) The improved range hood of claim 5, wherein said variable speed fan motor is controlled by a pulse-width modulated input.

7. (Original) The improved range hood of claim 5, where said controller stores multiple readings in memory, so as to determine if there is an upward or downward trend in the measured signal.

8. (Original) The improved range hood of claim 7, wherein said air quality sensors are used to detect the presence of a fire, and if a fire is detected, said variable speed fan is turned OFF and an audible alarm is turned ON.

9. (Amended) A smart range hood, comprising:

a vent connected to said range hood and vented to the outdoors;

a variable speed fan connected to said vent;

a plurality of air quality sensors; ~~and~~

~~a micro-controller, said micro-controller being adapted to process signals from said plurality of air quality sensors and determine the appropriate speed of said variable speed fan based on levels of predetermined air quality constituents detected by said air quality sensors~~

a micro-controller, said micro-controller being adapted to examine the composite output of said air quality sensors, as well as, the trend information arising from them, and determine from said information, an instantaneous ventilation requirement; and

a control signal, produced by said micro-controller to regulate the fan speed such that every combination of air quality sensor levels will have a unique associated fan speed based on said ventilation requirement.

10. (Original) The range hood of claim 9, wherein said plurality of air quality sensors include, temperature, humidity, carbon monoxide and smoke sensors.

11. (Original) The range hood of claim 10, wherein said micro-controller utilizes an algorithm that combines the output of said plurality of air quality sensors in order to derive an output ventilation requirement.

12. (Original) The range hood of claim 10, including an override control which allows a user to turn said variable speed fan ON to a desired level manually and to shut said variable speed fan OFF.

13. (Original) The range hood of claim 12, wherein said air quality sensors are mounted to sample both the air stream drawn into said range hood through forced convection, as well as, the ambient air in the surrounding living space.

14. (Amended) A system that senses the air in and around a range hood for the presence of particular hazardous elements, comprising:

a collecting hood;

a variable speed fan;

a series of sensors adapted to sense predetermined hazardous elements;

a controller adapted to integrate signals from said series of sensors, ~~derive a ventilating requirement from them, and with said ventilating requirement drive said variable speed fan in accordance with said ventilating requirement~~ as well as, the trend information arising from them, and determine from said information, an instantaneous ventilation requirement, and

a control signal, produced by said controller to regulate the fan speed such that every combination of air quality sensor levels will have a unique associated fan speed based on said ventilation requirement.

15. (Original) The system of claim 14, including a display adapted to indicate the presence of each of said particular hazardous elements.

16. (Amended) The system of claim 15, wherein said display includes an audible alarm that is activated if ~~hazardous elements are detected~~ despite the highest degree of airflow deployed in response to a hazard condition, the detected contaminant presence remains at a hazardous level for longer than a predetermined period of time.

17. (Amended) The system of claim 14, wherein said controller uses a fuzzy logic control algorithm to provide appropriate fan speed based on computed ventilation requirements in such a way that;

the air quality sensor outputs are mapped into linguistic labels by means of membership functions that can in turn be used with experiential rules of the form: IF Smoke is MEDIUM and CO is LOW, THEN Fan speed should be MEDIUM;

and such that two different input conditions such as Temperature is HOT and Temperature is WARM can be true to different degrees depending on the actual temperature and the way that the membership functions that map the inputs to the labels are drawn;

and such that the resulting action prescribed by the controller would be a weighted average that reflects the degree to which each of the input conditions are true.

18. (Original) The system of claim 14, wherein said variable speed fan is mounted exterior to the structure being ventilated.